

FSH 2109.14 - PESTICIDE-USE MANAGEMENT AND COORDINATION
HANDBOOK
WO AMENDMENT 2109.14-94-1
EFFECTIVE 12/06/94

CHAPTER 40 - STORAGE, TRANSPORTATION, AND DISPOSAL

41 - STORAGE, TRANSPORTATION, AND DISPOSAL. (FSM 2157). Follow the direction in this chapter to ensure proper storage, transportation, disposal, and handling precautions needed to prevent and control pesticide spills. Additional requirements may be found in 40 CFR Part 165. Requirements on the handling and disposal of pesticides classified as hazardous wastes may be found in 40 CFR Parts 160-165.

If a spill or accident should occur, implement proper spill cleanup and disposal to minimize possible adverse impact to the environment, public, or employee health and safety. This chapter provides:

1. Guidelines for pesticide storage and transportation;
2. Guidelines for routine inspection of storage areas and vehicles for leaking or damaged containers;
3. Guidelines and procedures for pesticide disposal;
4. Procedures for pesticide spill prevention.

The direction in this chapter is intended for pesticide coordinators, incident commanders, and others who have pesticide project/incident storage, transportation, and disposal responsibilities.

Contracts for pesticide application services should also include requirements contractor storage, transportation, and disposal of project pesticides, unless there are significant advantages with other arrangements.

41.1 - Storage. Follow the recommended procedures for storage of pesticides and pesticide containers in 40 CFR Part 165, Subpart C.

41.11 - General Requirements. Use proper storage techniques to eliminate or minimize effects of and to significantly reduce accidental poisonings, environmental contamination, or the danger of fire. Base storage site selection on the amount, toxicity, length of storage, physical properties, and environmental hazards of the pesticides or hazardous wastes involved. Locate storage sites where flooding is unlikely. This is usually outside the 500-year floodplain. Test soil texture,

structure, and geologic and hydrologic characteristics to minimize the potential for water contamination. Drainage from the site should be contained by natural or artificial barriers or dikes. Dispose of pesticide spillage and drainage wastes at a storage site as excess pesticides or hazardous wastes (sec. 41.3).

Store large stocks (greater than 200 gallons or 400 pounds) of pesticides in a permanent facility (sec. 41.13) reserved for such purpose, that is adequately posted with appropriate warning signs on all exterior walls and can be securely locked. If permanent storage facilities are not available and pesticides must be stored temporarily (sec. 41.12), storage must be under lock and key, either in a building or behind climb-proof fences, and properly posted with warning signs.

Post security guards or install electronic surveillance as appropriate to prevent pilferage, damage, or unauthorized access to pesticides in temporary storage facilities. Only authorized persons shall be permitted access to the pesticide storage facility.

Limit the quantity of pesticides held in storage to amounts planned for near-term use. Stockpiling of pesticides is discouraged. At the completion of a project or day's work, all unused chemicals and empty containers must be returned to a temporary (sec. 41.12) or permanent (sec. 41.13) storage facility. Hold empty containers at the pesticide storage site until final disposal.

Obtain a Material Safety Data Sheet (MSDS) from the manufacturer or distributor for each pesticide formulation at the time of purchase. Keep all MSDS's at readily accessible locations in the event of an emergency. These MSDS's provide safety data and information that pesticide specialists, firefighters, users, and medical personnel can use in emergencies.

Follow these practices to ensure safe storage of pesticides:

1. Store pesticides away from food, feed, seed, potable water, clothing, oil-base paints and other flammable liquids, and fertilizer (except pesticide-fertilizer combinations). Do not allow anyone to eat, drink or smoke in or near facilities where pesticides are stored.
2. Store pesticides in original containers with legible and visible labels. Check containers routinely to ensure that lids are tight and containers are not damaged. Ensure labels are plainly visible to permit ready access and inspection.
3. Protect pesticide container labels so that they remain legible. Pesticides containing the same active ingredient should be segregated and stored together with a sign displaying the common name of the active ingredient(s).
4. Obtain MSDS's from the manufacturers of the stored pesticides. Maintain files of all MSDS's at the storage facility and in the unit's administrative office where they are accessible to employees.

5. Do not store pesticides in containers meant for food, feed, or beverages or in other unauthorized containers.

6. Avoid cross-contamination of pesticides. Store volatile pesticides in tightly sealed containers in areas separate from other easily contaminated pesticides. Pesticides must be stored separately in areas with four-foot aisles in order to avoid cross-contamination or adverse reactions.

7. Store pesticides in well-ventilated, cool, dry storage areas. Store pesticides and their containers off the ground. Provide easy access. Protect stored pesticides from freezing temperatures, rain, and direct sunlight. Follow the manufacturer's recommendations regarding protection from freezing temperatures and other storage precautions listed on appropriate MSDS's and the pesticide label.

8. Inspect storage facilities regularly for leaking or damaged containers. Handle leaking or damaged containers as follows:

- a. Separate clean, undamaged containers from those that are leaking.
- b. Isolate containers that have been contaminated by leaking containers for later cleanup.
- c. Clean any spilled pesticides from the outside of contaminated containers by using appropriate decontamination or cleaning solutions (ex. 01). Collect all residue in a drip pan and store in a marked drum for proper disposal. Pesticides classified as hazardous in 40 CFR Part 261 must be handled as hazardous waste when disposed. Hazardous waste accumulation marking and disposal requirements are in 40 CFR Parts 162-165.
- d. Repackage damaged or leaking pesticide containers by overpacking or recontainerization in approved containers.
- e. Relabel overpacked pesticide containers with facsimiles of original labels.
- f. Include the date of repackaging on the outside of the new container.
- g. Clean all contaminated areas after completing the repackaging operation.
- h. Clearly mark empty containers or containers of excess pesticides awaiting disposal "FOR DISPOSAL ONLY."
- i. Properly dispose of emptied and rinsed pesticide containers.

9. Notify local fire departments as to the location, types, and quantities of pesticides being stored.

10. Keep and use personal protective clothing and equipment, including an eye wash station or other eye wash equipment, readily available at temporary and permanent storage facilities, mixing stations, and work project locations. Keep at least 10 gallons of clean water, labeled "WASHWATER ONLY," available at the storage facility for emergency decontamination purposes.

11. Know and follow State laws regulating pesticides.

Inspect facilities to ensure safe storage of pesticides at least once annually.

Exhibit 01 provides an example of a checklist for such inspections.

41.11 - Exhibit 01

PESTICIDE STORAGE FACILITY INSPECTION CHECKLIST

FOREST Boise DISTRICT Idaho City DATE 8-20-91
 LOCATION of FACILITY Administrative site INSPECTOR F.Jones

	<u>Acceptable</u>
	YES NO

Permanent Pesticide Storage Facility:

- | | |
|--|--------|
| 1. Meets the requirements for facility development and operation (SM 7310) and complies with applicable building codes and fire regulations. | X |
| 2. Located at least 50 feet from other structures unless provided with approved 3-hour fire-resistant construction. | X |
| 3. Equipped with appropriate wiring, equipment, and fixtures suitable for use in Class I, Division I locations as specified in the National Electrical Code. | X
X |
| 4. Located outside the 500-year floodplain (E.O. 11988). These facilities should not be subject to water inundation from either surface or groundwater. | X |
| 5. Constructed to contain spillage from the largest bulk container, or a 55-gallon drum, whichever is larger. | X |

All Pesticide Storage Facilities (Permanent and Temporary):

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| 1. Provides adequate protection to containers and contents from direct sunlight, wet weather, or freezing temperatures | X |
| 2. Locked to prevent entry by unauthorized personnel. | X |
| 3. One or more ABC-type (all purpose) portable fire extinguishers are installed at the facility in a visible, readily accessible location. | X |
| 4. Pesticides are properly used up and disposed of by the end of the shelf life recommended by the manufacturer. (Pesticides should be clearly dated.) | X |
| 5. Temperature and humidity of storage facility is maintained within pesticide manufacturer's recommendations. | X |
| 6. Constructed to provide adequate ventilation to prevent excessive buildup of fumes. | X |

41.11 - Exhibit 01--Continued

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| 7. | Pesticides not stored with food, feed, seed, potable water, clothes, oil-base paint, flammables, or fertilizers (except pesticide-fertilizer combinations). | X | |
| 8. | Clean water (10 gallons), soap, and towels are available for decontamination of personnel. | X | |
| 9. | An inventory of the stored pesticides is posted both inside and outside the facility. | X | |
| 10. | Material Safety Data Sheets (MSDS) are filed at the storage facility and in the unit's administrative office. | | X |
| 11. | Proper identification and warning signs are posted on exterior walls to advise personnel of the contents of stored materials. | | X |
| 12. | Pesticides are stored in original container(s) with readable labels. Containers are undamaged and not leaking. | X | |
| 13. | Pesticides containing the same active ingredient are segregated and stored together with a sign displaying the common name of the active ingredient. | | X |
| 14. | Personal protective clothing and equipment (respirators, goggles) are readily accessible and protected from contamination while not in use. | X | |
| 15. | The Chemical Transportation Emergency Center (CHEMTREC) toll-free telephone number (1-800-424-9300), the telephone number and location of the local poison control center, and fire department plus the 24-hour telephone numbers for persons responsible for the storage site are posted. | X | |
| 16. | Storage area is neat and orderly. Floors are clean and trash free. | X | |
| 17. | Facility has a safety plan which includes a Pesticide Spill Emergency Plan if storage is provided for more than 200 gallons or 400 pounds of pesticides. | X | |
| 18. | Emergency equipment (spill kit) is on hand for spill cleanup. | X | |
| 19. | Facility was inspected in the previous 12 months to ensure safe and compatible storage of pesticides. | X | |

41.12 - Temporary Storage. Use temporary storage facilities to store housekeeping-type pesticides, small quantities of pesticides (1 pound active ingredient or 1 gallon of formulated product), microbial pesticides that have low mammalian toxicity, or quantities of pesticides needed on-site for project operations. Temporary storage facilities may include research laboratories, fenced compounds, trucks, boxcars, tankcars, empty paint sheds, storerooms, and warehouses, where provisions are made to prevent unauthorized entry or damage to the pesticide or pesticide containers by the weather. Temporary storage sites should be located where flooding is unlikely and where contamination of any water system by runoff can be prevented. Temporary storage facilities must provide:

1. Identification and warning signs on rooms, buildings, fences, or trucks to advise of the contents of the stored material.
2. Protection of the pesticides from direct sunlight or inclement weather.
3. Adequate ventilation to prevent buildup of fumes.
4. Clean water (at least 10 gallons) and soap for decontamination of personnel.
5. Separate storage areas for different kinds of pesticides that may be subject to cross-contamination by volatiles according to directions on the pesticide label and other available information.
6. An inventory of the stored pesticides on the outside of the building, truck, laboratory, or other authorized temporary storage facility.
7. One or more ABC-type all-purpose fire extinguishers, which are visible and readily available to the storage facility.
8. Emergency eye wash station.

Limit the storage of pesticides on operational projects to the quantities need for the duration of the specific project. Do not exceed 60 days. State requirements for temporary storage must be met. Notify in writing local fire, health, and police departments of the temporary storage of large quantities of pesticides, based on local ordinances. Supply them with copies of appropriate Material Safety Data Sheets.

41.13 - Permanent Storage. Store pesticides not provided for in temporary storage (sec. 41.12) in permanent storage facilities. Separate pesticides from other flammable and combustible materials. Limit storage time to less than 1 year, unless the planned application is delayed due to appeal or litigation.

Inform local firefighting organizations in writing of the location and contents of all pesticide storage facilities (especially permanent facilities). Include building plans showing the type and location of stored pesticides. Advise local firefighting officials that special hazards are involved when fighting pesticide fires and that in some

cases it is best to allow the fire to burn itself out. Advise firefighters that self-contained, positive-pressure breathing apparatus is required when fighting pesticide fires.

41.14 - Facility Specifications. Permanent pesticide storage facilities must meet the requirements for facility development and operation (FSM 7310) and State and local regulations and ordinances for permanent storage of pesticides. Permanent structures shall also comply with local building restrictions and fire codes. Comply with the following requirements:

1. Locate pesticide storage facilities in separate, isolated areas at least 50 feet from other structures unless provided with approved 3-hour fire-resistant construction.
2. Provide pesticide storage space with adequate protection to containers and contents from deleterious weather conditions. Areas where large quantities of highly toxic or volatile pesticides are stored may require exhaust fans to help reduce the ambient temperature and the concentration of toxic fumes.
3. Equip pesticide storage facilities with appropriate wiring, equipment, and fixtures suitable for use in Class I, Division I locations, as specified in the National Electrical Code.
4. Ensure the security of each pesticide storage facility by keeping it locked to prevent entry by unauthorized persons.
5. Install one or more ABC-type (all purpose) portable fire extinguishers at each facility at a readily accessible location.
6. Label tools, clothing, and other equipment that have been used during the handling of pesticides at storage sites. Use the label "Contaminated With Pesticides."
7. Provide an ample supply of clean water and soap to wash spilled chemicals from personnel. This requirement could be met with a washbasin or shower with a delayed-closing pullchain valve. Dispose of all contaminated water as excess pesticide.
8. Construct pesticide storage facilities to contain 110 percent of the contents of the largest bulk container or a 55-gallon drum, whichever is larger. Incorporate a sump or similar provision into the structure to facilitate removal of liquid spillage via an EPA-approved pesticide waste handling system.
9. Construct pesticide storage facilities with flooring that is continuous and impervious to pesticides.
10. Post an up-to-date inventory of all pesticides on hand on the outside of the storage area in a location that is easily accessible and readily visible to firefighting

personnel. Post the Chemical Transportation Emergency Center (CHEMTREC) toll-free telephone number (1-800-424-9300), the telephone number and location of the appropriate local Poison Control Center, and the fire department and the 24-hour telephone numbers for the person(s) responsible for the storage site.

41.15 - Hazard Identification. Post warning signs (Danger, Poison, Pesticide Storage) on the outside of all exterior walls, as well as on the door of the storage area. The term "Poison" must be shown if the pesticides in storage are highly toxic (LD50 less than mg/kg). Post fire hazard rating signs (FSH 6709.11) on the door and on the outside of all exterior walls.

Use wording and numbering on the signs consistent with the National Fire Protection Association's (NFPA) standard system for the identification of fire hazards of materials (NFPA No. 704-1975). This system applies to facilities for the storage of pesticides or other hazardous materials (FSH 6709.11, sec. 9.3). Use bilingual signing where appropriate.

42 - TRANSPORTATION. Follow the recommended procedures for transporting pesticides in 49 CFR Part 171.

42.1 - General Requirements. Accidental spills can occur during the transport of pesticides because damage to pesticide containers most often occurs during loading and transport. Observe the following general safety precautions to minimize such incidents and mitigate their effects when they do occur:

1. Transport from the storage area only the quantity needed for the day's operations. Return leftover pesticides to an approved pesticide storage facility at the end of each day.
2. Do not leave vehicles that are transporting pesticides unattended unless the pesticides are in a locked area.
3. Use appropriate placards such as "WARNING" to identify vehicle contents.
4. Keep pesticides in truck beds or trailers isolated from drivers and passengers. Trucks with wooden platforms shall not be used, as spills in these trucks may require replacement of the platform planking for complete decontamination.
5. Transport pesticides in their original containers which must be tightly closed to prevent spills.
6. Make periodic checks en route to ensure that no spillage has occurred. Be sure all bungs and lids are tight. The outside of containers must not be contaminated with pesticide.

7. Cover pesticide containers to protect them from direct sunlight while in transit to the worksite and place them in the shade upon arrival. Excessive heat can cause expansion of certain pesticides, resulting in container rupture or violent overflow when opened.

8. Follow the specific procedures described in project safety plans (FSM 2153.3, FSM 6700, and sec. 16.1) if a pesticide accident or spill occurs. Carry copies of the accident and spill plan in the vehicle regardless of the volume of pesticide being transported.

9. Maintain a manifest of each pesticide cargo. Identify the amount of pesticide being transported, number and size of containers, product name, chemical name, and the EPA registration number.

10. Do not transport pesticide containers in the same cargo area with food, livestock feeds, clothing, or potable water.

11. Do not transport open containers.

42.2 - Department of Transportation Regulations. Transportation of hazardous materials and hazardous wastes is regulated by the Department of Transportation (DOT) (49 CFR Part 171). When shipped in amounts above certain threshold quantities as defined by DOT, pesticides must be properly classed, described, packaged, marked, and labeled before shipment. Contact a local DOT office or an EPA Regional Office for guidance on transportation.

1. Prepare shipping papers and manifests to accompany all hazardous wastes during transport to disposal sites (49 CFR Part 171). The shipping papers must contain a description of the hazardous material, including:

- a. The DOT designated shipping name.
- b. The hazard classification, such as Poison A/B or "Otherwise Regulated Material" (ORM-A-E).
- c. The identification number. For example: 2,4-D Dichlorophenoxy acetic acid ester ORM-E, NA 2765.
- d. The number and size of containers containing the specific hazardous material.
- e. The total quantity (by weight, volume, or as otherwise appropriate) of the hazardous material covered by the description.
- f. A label on empty containers that contain the residue of a hazardous material that states "EMPTY: Last contained ****" (name of the last material contained in the package).

g. For shipment of contaminated pesticides or residues from a pesticide spill, a label with the word "WASTE" preceding the name of the hazardous material. For example: "WASTE 2,4-D Dichlorophenoxy acetic acid."

2. When shipping liquids, place the containers with the lids upward and legibly marked "THIS END UP." Each package containing a material classed as an Otherwise Regulated Material (ORM-A, B, C, D, or E) must be plainly marked on at least one side or end with the appropriate ORM designation immediately below the proper shipping name of the material.

Use the original shipping containers, if appropriate, when transporting pesticides, pesticide residues, or wastes. If repackaging is necessary, use approved overpack containers constructed so that:

- a. There will be no release of the material to the environment.
- b. There will be no mixture of gases or vapors that, through expansion or explosion, will rupture the container.
- c. There will be no significant chemical reaction among any of the pesticides or between the pesticides and the container.
- d. Closures or lids will prevent leakage of the contents during normal transportation. Gasketed closures fit, with gaskets made from material that will not be deteriorated by the contents of the container.
- e. Markings on containers previously used to ship hazardous materials are removed or obliterated.
- f. All containers are properly marked or labeled.

DOT regulations require placarding of vehicles when 100 pounds (AI) or more of a class B poison (generally those pesticides with an LD₅₀ less than 50 mg/kg) are transported on commercial highways. The white diamond-shaped "POISON" placard must be placed on all four sides of the vehicle.

43 - DISPOSAL. Pesticide applicators encounter two basic situations in which waste disposal may be necessary. The first situation involves the disposal of empty pesticide containers. The second situation involves the disposal of excess pesticides containers. Follow the pesticide disposal requirements and recommended procedures in 40 CFR 165.8 when disposing of pesticide containers or pesticide wastes which are not classified as hazardous wastes. Follow the disposal requirements in 40 CFR Parts 261-265.

43.1 - Disposal of Pesticide Containers. "Empty" pesticide containers are never completely empty and must be handled cautiously. These containers, along with leftover quantities of pesticides or waste materials slated for disposal, represent a hazard to humans (especially children) and the environment. Follow all instructions on the pesticide label and the MSDS to reduce the hazard associated with these containers.

Take following precautions in disposing of empty pesticide containers:

1. Maintain a regular system of disposal. Do not accumulate empty containers.
2. Triple rinse "empty" containers with the pesticide carrier and pour the washings back into the spray tank for application to the project target area. Do not pour rinse washings onto the ground. An alternative is to use pressure rinsing for 30 to 60 seconds.
3. Do not reuse empty pesticide containers for unauthorized purposes. Encourage the pesticide supplier to recycle empty containers.
4. Retain empty containers in a secure pesticide storage facility until adequate disposal can be arranged.
5. Crush and punch holes in metal and plastic containers and break glass containers when depositing them in a specially-designated landfill (as defined in 40 CFR 165.1(w)) to ensure against reuse. Landfill operators generally prefer to accept crushed containers since handling and disposal are easier and crushed containers can contain only small amounts of residue or other residue.
6. Prior to triple rinsing and decontamination of residues on the exterior of containers, handle empty pesticide containers with the same caution accorded the active ingredient, including the use of required personal protective clothing and equipment specified in the respective MSDS.
7. Do not burn, cut, or punch holes in pressurized or aerosol containers, as they may explode.
8. Follow State and local regulations if they are unique regarding pesticide container disposal.

43.2 - Disposal of Excess Pesticides.

1. When considering disposal of excess pesticide, give first preference to procedures designed to recover some useful value from these materials. A preferred approach is to use the pesticide for the purpose originally intended, provided this use is legal. Explore all possibilities for transfer of significant quantities of leftover pesticide to a unit or subunit planning similar work. Another alternative is to return the material or containers to the manufacturer for potential reuse.

2. If use or transfer of excess pesticides is impossible, contact your unit Hazardous Materials Coordinator and your Regional Pesticide Coordinator/Specialist for further instructions on disposing of pesticides. In some cases disposal of excess pesticides requires compliance with EPA and State hazardous waste regulations. Unit Hazardous Materials Coordinators assist in the classification of wastes and the determination of proper disposal methods.

3. Do not bury any empty pesticide containers or containers of waste pesticides on National Forest System lands.